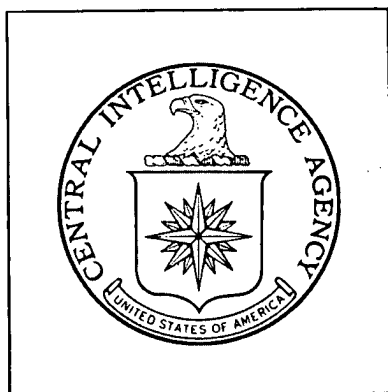


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**DIRECTORATE OF
INTELLIGENCE**

**Industrial Facilities
(Non-Military)**

Basic Imagery Interpretation Report

Kirishi Petroleum Refinery

Kirishi, USSR



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INSTALLATION OR ACTIVITY NAME		COUNTRY
Kirishi Petroleum Refinery		UR
UTM COORDINATES	GEOGRAPHIC COORDINATES	WAC-PIC NO.
36VWL456942	59-28-47N 032-03-30E	0153-138
MAP REFERENCE		
8th RTS. USATC 200, Sheet 0153-5AL, 2nd edition, Oct 59, Scale 1:200,000 (SECRET)		
LATEST IMAGERY USED	NEGATION DATE (If required)	
	Not Required	

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ABSTRACT

The Kirishi Petroleum Refinery is one of the newer refineries being built in the Soviet Union utilizing the latest standardized design which was reportedly accepted for use in 1959. This refinery has been under construction since late 1961 or early 1962 and appeared to be at least partially in production in 1967. The primary distillation facilities now in place indicate that the refinery will have an approximate annual crude oil charge capacity of six million metric tons. The number and diversity of processing units presently in place or under construction indicate that the plant will have the capability of producing a full line of fuels, lubes, waxes, and asphaltic materials.

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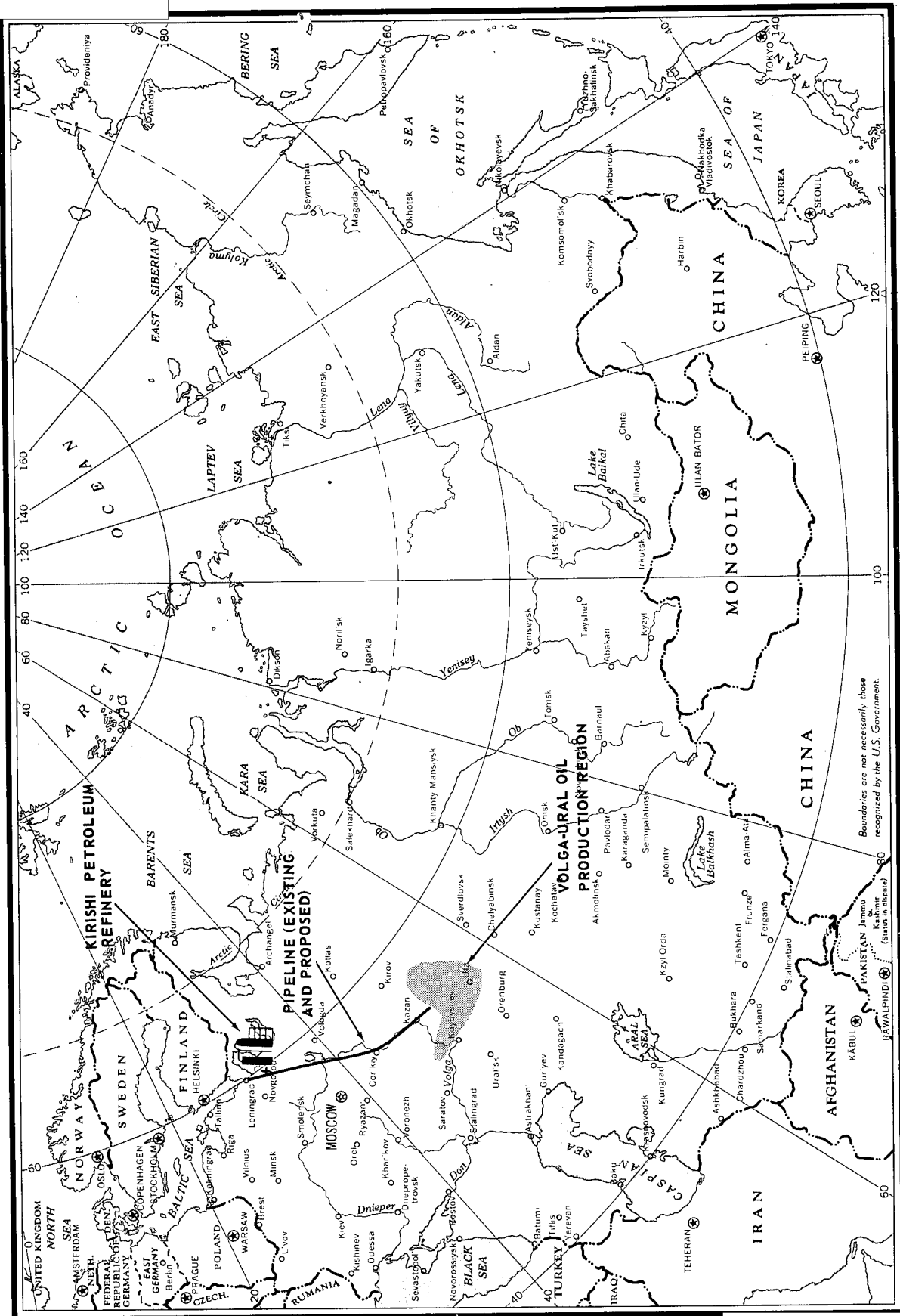


FIGURE 1. LOCATION MAP

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INTRODUCTION

The Kirishi Petroleum Refinery is located on the east bank of the Volkhov River approximately 2 nautical miles northeast of the center of the Kirishi town complex. Upon completion, the fenced refinery area will measure approximately 3,100 by 5,400 feet and will include about 380 acres.

The Kirishi refinery was constructed to process crude oil from the Volga-Ural Region, Tatar ASSR, which now accounts for a large percentage of the Soviet Union's crude oil production. A large-diameter pipeline from the Volga-Ural Region to Leningrad via Kirishi will probably be used to transport the crude oil into the refinery.^{1,2/} Relatively high sulfur and salt content of much of the Volga-Ural crude oil could present special design and maintenance problems at this refinery and could explain the construction of some of the secondary or auxiliary refinery units seen at Kirishi.^{1/}

Rail service into the refinery is provided by a spur from the main line between Leningrad and Vesyegonsk via Kirishi. The small scale of the available photography precluded any rail traffic counts in the refinery.

BASIC DESCRIPTION

Status and Activity

A generalized description of the construction history of the refinery and associated facilities will be given. Mention of specific items will be made to point out salient points in the development of the complex.

June 1962 -- All areas in the complex had been surveyed and cleared. Small construction sites were randomly scattered throughout the cleared areas. Railroad right-of-ways were cleared into the refinery area, but due to the small scale of photography it could not be determined if tracks had been laid. The major portion of the workers' housing was completed.

June 1963 -- Construction continued throughout the complex at a moderate rate with the most noticeable progress being made in the concrete batch plant. Construction of the main primary distillation columns and the products storage tank farm had been started. The water treatment plant and additional rail spurs were under construction.

October 1964 -- Construction activity was greatly increased in the refinery area. The primary distillation columns were complete, and the associated equipment such as furnaces, heat exchangers, cooling towers, and compressor facilities were in various stages of construction. Work was in an early stage on the crude oil storage tanks, interior roads, pipelines and steamlines. The concrete batch plant was essentially complete. Earth moving work had just been started on the large water storage reservoirs located a short distance northeast of the refinery area.

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March 1965 -- The primary distillation facilities were complete. Construction on the secondary refinery units was started. Interior service road, pipelines and steamlines were in late stages of construction. The thermal power plant was nearing completion.

August 1966 - A rail spur with loading racks and several unidentified units for secondary refinery processing had been completed. The refinery appeared to be at least partially operational, but none of the usual indicators of actual production were noted. The thermal power plant also appeared complete, but not in operation.

January 1967 -- Photo coverage of this period offers the first definite indicators of production activity in the complex. Atmospheric emissions were noted coming from the thermal power plant and from the cooling towers at the primary distillation unit. Also, the flare tower in the refinery was burning. Construction on the various secondary and auxiliary refining elements was continuing at a high rate.

June 1967 -- At least three of the secondary processing areas appeared completed or in late stages of construction. Construction on additional refinery units continued at an apparently accelerated rate.

Operational Functions

Based on photography, the Kirishi Refinery appears to follow the previously observed Soviet practice of placing refineries in partial production as the various components are completed. As previously mentioned, the first definite indicators of production activity were observed on photography of January 1967. At that time, and even later in June 1967, the only units that appeared operational were the primary distillation units. Therefore, it appears probable that the only significant products from the refinery through June 1967 were fuel oils and lower grade gasolines.

The number and variety of secondary refinery units which are presently completed or under construction, though not definitely identifiable, indicate that future products from this refinery will include a wide range of fuels and gasolines, liquefied gas products, and possibly lubes, waxes and asphaltic materials.

No petrochemical facilities could be identified within the refinery complex or in the surrounding area on the available photography.

Physical Features

The following table lists the functional areas and facilities within the refinery and the associated plants. Precise identification of the specialized refinery equipment was not possible because of the small scale and poor quality of the imagery covering the complex. The tentative identifications of equipment are based on the overall aspects of the refinery, the relative positions of the units, and published listings of the standardized units to be found in the newer-type, six million ton Soviet refinery. 1/

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TABLE I

Equipment and Facilities at the Kirishi
Refinery Complex
(Items are Keyed to Figure 3)

<u>Area</u>	<u>Description</u>	<u>Equipment</u>
A	Transfer Facilities	Rail spur with 2 probable loading racks 1 support building 1 possible large semiburied storage tank (not measured)
B	Unidentified Processing Area U/C	1 probable processing unit 1 possible small processing unit/storage tank 2 buildings 2 semiburied storage tanks diam. 50 ft (15m)
C	Crude Oil and Products Storage Area	1 support building 20 storage tanks diam. 100 ft (30m) 2 storage tanks diam. 30 ft (9m) 1 possible semiburied storage tank diam. 70 ft (21m)
D	Possible Gas Products Area	10 pieces U/I equipment and process buildings 6 support buildings 2 large semiburied storage tanks (not measured) 2 storage tanks diam. 40 ft (12m) 5 horizontal blimp-type tanks length 50 ft (15m) 1 gasholder diam. 80 ft (24m) 1 flare tower
E	Products Storage Area	14 storage tanks diam. 40 ft (12m) 24 storage tanks diam. 20 ft (6m) 9 horizontal blimp-type tanks length 40 ft (12m) 2 support buildings

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<u>Area</u>	<u>Description</u>	<u>Equipment</u>
F	Unidentified Area U/C	7 buildings 4 buildings under construction
G	Secondary Processing Area	1 U/I refining unit 2 possible pipe furnaces 4 process and support buildings 4 possibly semiburied storage tanks diam. 60 ft (18m)
H	Secondary Processing Area	3 pieces U/I process equipment 2 buildings 3 process/storage tanks diam. 30 ft (9m)
I	Secondary Processing Area	2 pieces U/I process equipment (columns/reactors) 1 possible large pipe furnace 3 process and support buildings 2 storage tanks diam. 30 ft (9m)
J	Secondary Processing Area	2 U/I processing units (columns/reactors) 2 large pipe furnaces 3 buildings 2 process tanks diam. 25 ft (7.5m)
K	Possible Lube Oil Area U/C	3 possible pieces of processing equipment 1 process building with 8 associated or attached pieces of equipment/columns/absorbers 2 possible buildings/process units 7 support buildings 19 storage tanks diam. 20 ft (6m) 3 horizontal blimp-type tanks length 40 ft (12m)
L	Primary Distillation Area	Multistage distillation unit with 3 columns/groups of columns (vacuum, atmospheric and topping stills), 2 banks of heat exchangers and accumulators, 2 pipe furnaces, 2 possible pipe furnaces, compressor building, control house,

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<u>Area</u>	<u>Description</u>	<u>Equipment</u>
L	Primary Distillation Area - continued	and 1 processing building with 7 horizontal drums/items of equipment 6 support buildings 3 banks of cooling towers 2 cylindrical tanks diam. 60 ft (18m) 4 cylindrical tanks diam. 20 ft (6m) 3 cooling coil racks/spray ponds
M	Light Fabrication/Engineering Area	3 buildings
N	Administration and Support Area	9 buildings 1 small storage tank
O	Construction Material Storage Area	3 storage buildings 1 support building Materials in open storage
Thermal Power Plant		1 boilerhouse and generator hall 26 miscellaneous buildings 5 small fuel storage tanks 1 water tower
Concrete Batch Plant		39 buildings
Water Treatment Plant		18 filter and treatment basins 3 small buildings 4 small chemical storage tanks
Housing Area		74 housing and support buildings (also 11 support buildings adjacent to the housing area and near the refinery fence)

*Note: All dimensions are given in both feet and meters, and are only approximate. Measurements were made in meters and rounded off to the nearest five feet.

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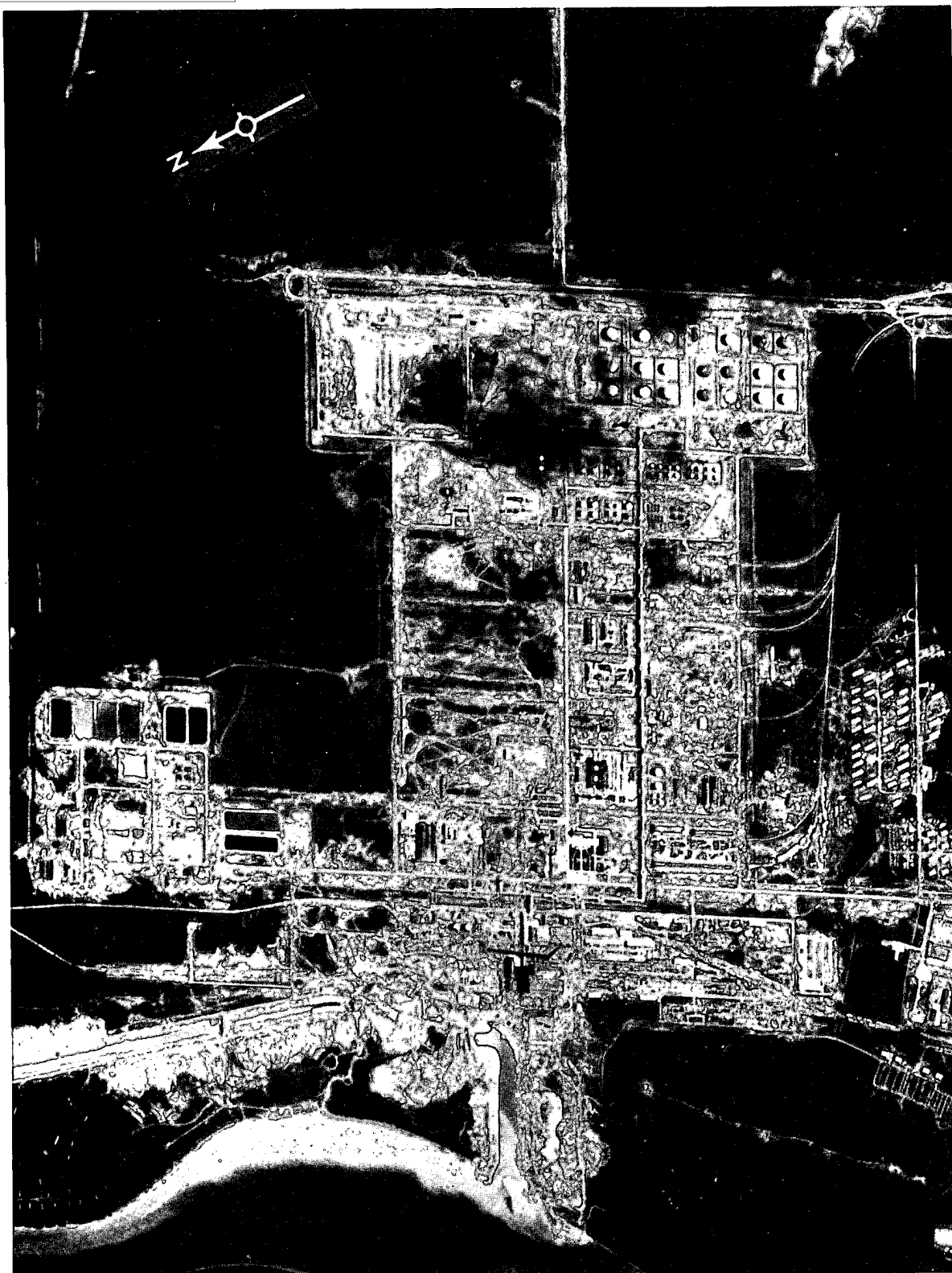


FIGURE 2. KIRISHI PETROLEUM REFINERY,

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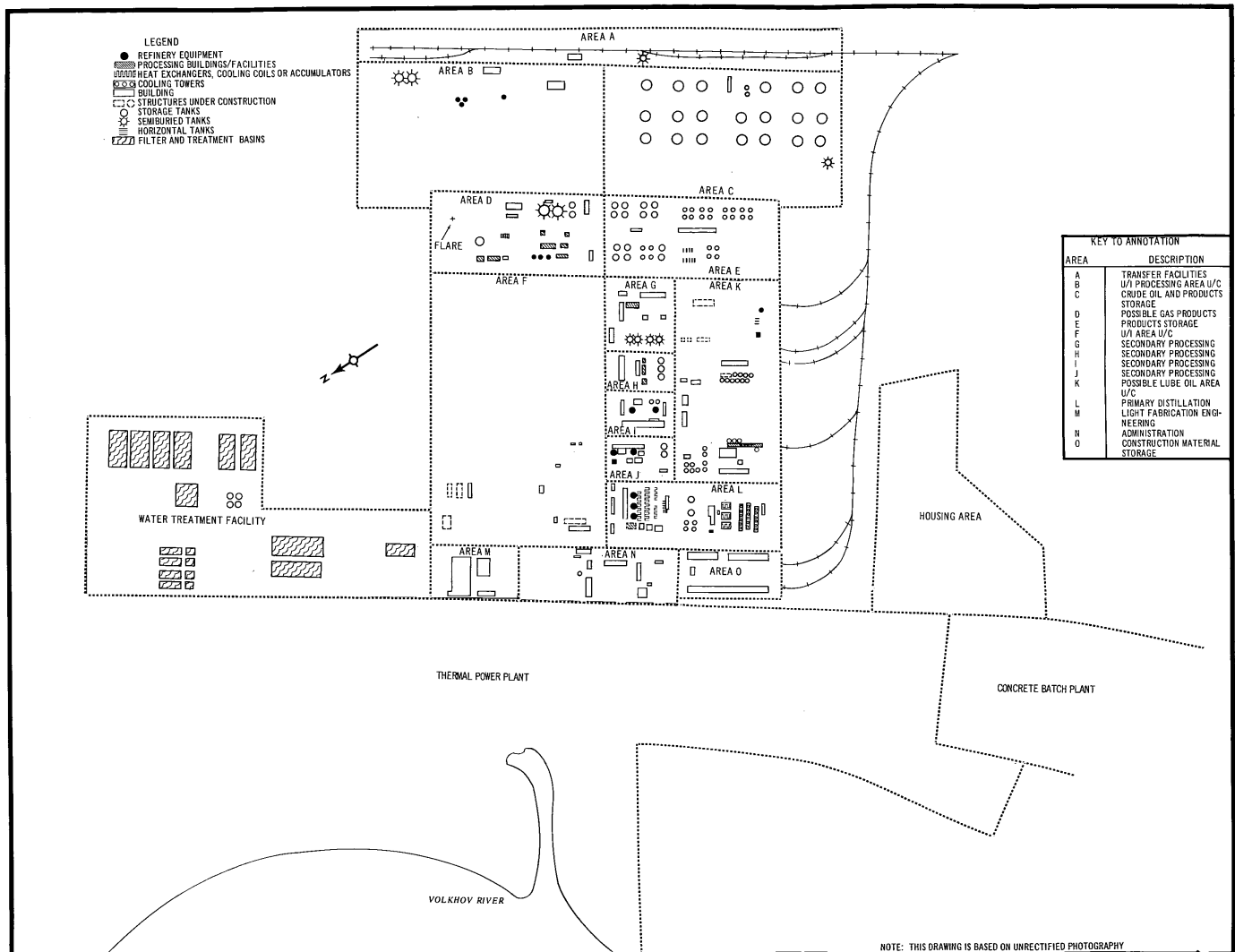


FIGURE 3. KIRISHI PETROLEUM REFINERY

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Maps

8th RTS. US Air Target Chart 200, Sheet 0153-5AL, 2nd edition, Oct 59,
Scale 1:200,000 (SECRET)

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2. Gardner, Frank J. "New Areas Spur Soviet Oil Gains", The Oil and
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Requirement

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